

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Doms et al.

Serial No.: 10/032,311

Group Art Unit: 1648

Filed: December 21, 2001

Examiner: Jeffrey S. Parkin

Title: **LIPOPARTICLE COMPRISING A PROTEIN AND METHODS OF  
MAKING AND USING THE SAME**

**DECLARATION OF DR. BENJAMIN DORANZ  
PURSUANT TO 37 CFR § 1.132**

I, Dr. Benjamin Doranz, declare as follows:

1. I am President and Chief Scientific Officer of Integral Molecular, Inc, exclusive licensee of the above-identified patent application.
2. Integral Molecular has made isolated virus-like particles including an enveloped virus core the virus-like particle further including a heterologous multiple membrane spanning protein to study the structure and function of the heterologous multiple membrane spanning protein.
3. Integral Molecular has been able to use the isolated particles comprising heterologous multiple membrane spanning proteins that are ion channels and show that the ion channel function of Shaker, hERG, 5HT3a, and KCNQ2/3 is retained in the cell free environment of the virus-like particle.
4. Integral Molecular has been able to demonstrate that G-protein coupled receptors can retain their function in the cell free environment of the virus-like particle. Integral Molecular has demonstrated that RANTES, the ligand of CCR5, can activate CCR5 in a virus-like particle. Integral Molecular has demonstrated that SDF-1, the ligand of CXCR4, can activate CXCR4 in a

virus-like particle. Integral Molecular has demonstrated that serotonin, the ligand of 5HT3a, can activate 5HT3a in a virus-like particle.

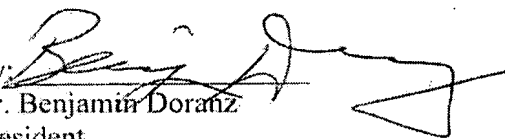
5. Integral Molecular has also been able to use the virus-like particles that include heterologous multiple membrane spanning proteins to measure affinity and kinetics of ligand bindings with G-protein coupled receptors. Integral Molecular has been able to study the  $k_{on}$  and  $k_{off}$  rates of GPCR binding partners in the isolated virus-like particles demonstrating that the GPCRs are properly folded.

6. It was surprising that the function and structure of the multiple membrane spanning proteins as described herein in the virus-like particles was preserved.

7. These surprising results allow heterologous multiple membrane proteins to be used and studied in ways that prior to the invention claimed in the above-identified application were not possible.

8. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful and false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: 8/8/07

By:   
Dr. Benjamin Doranz  
President  
Chief Scientific Officer  
Integral Molecular, Inc.